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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/616,385	07/14/2000	Enric Musoll	P3809	5804

24739 7590 11/18/2003

CENTRAL COAST PATENT AGENCY
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EXAMINER

COLEMAN, ERIC

ART UNIT	PAPER NUMBER
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2183

DATE MAILED: 11/18/2003

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/616,385

Applicant(s)

MUSOLL ET AL.

Examiner

Eric Coleman

Art Unit

2183

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borkenhagen (patent No. 6,076,157) (submitted by applicant) and Kalafatis (patent No. 6,535,905).
2. Borkenhagen taught the invention substantially as claimed including a data processing ("DP") system comprising:
 - a) Multi-streaming processor (e.g., see col. 5, lines 8-57); and
 - b) Means and method for selecting which stream to fetch instructions (e.g., see figs. 2, 4a, and col. 13, lines 20-col. 14, line 51).
3. Borkenhagen taught the use of a fetch algorithm that included switching threads (e.g., see col. 16, lines 11-38 and col. 12, lines 1-38). Borkenhagen however did not expressly (claims 1,6,11,16,21,23) detail that predictor for switching threads or streams that included whether a branch was taken. Kalafatis however specifically taught a switch on branch logic (152)(e.g., see col. 10, lines 8-59) that used a scheme or algorithm that determined whether to switch threads depending on whether a branch was predicted as taken.
4. It would have been obvious to one of ordinary skill to combine the teachings of Kalafatis with teachings of Borkenhagen as they were both directed to the problems of efficient switching between instruction streams or threads. One of ordinary skill would have been motivated to incorporate the Kalafatis teaching of a switch on branch logic for switching threads when a branch was predicted taken in order to reduce the allocation of processor resource to that specific thread in view of the possibility of that

Art Unit: 2183

specific thread being mispredicted (e.g., see col. 10, lines 8-24 of Kalafatis).

5. As per claims 2,3,12,13, Borkenhagen did not specify this limitation. Kalafatis however taught the limitation of switching to the target location for fetching instructions when a branch was predicted as taken and to continue sequential fetching when a branch was not taken (e.g., see col. 9, line 42-col. 10, line 24). As to the condition of a cache miss (claims 7,8,17,18) Borkenhagen taught the switching of instruction streams on a cache miss (e.g., see col., 10, line 58-col. 11, line 35). Clearly when a cache hit occurred there would have been no need for a thread switch. Consequently one or ordinary skill would have been motivated to use a prediction of a cache miss versus waiting for the cache miss to occur for switching because of its similarity to the use of prediction of branch versus waiting for the branch to be executed of Kalafatis and since it would have provided more efficient processing of the streams, and less waiting for processing of a stream that would incur a cache miss.

6. As per claims 4,5,9,10,14,15,19,20,21-24, Kalafatis taught the use of a predictor to determine if a branch was to be taken or not and locating instructions to dispatch (e.g., see col. 10, lines 11-59). Borkenhagen taught dispatching the instructions to execution units (e.g., see col. 8, lines 15-39) and selective switching on a cache miss (e.g., see col. 10, line 58-col. 11, line 17).

Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Coleman whose telephone number is (703) 305-

Art Unit: 2183

9674. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (703) 305-9712. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-305-3900.

EC


ERIC COLEMAN
PRIMARY EXAMINER

November 14, 2003